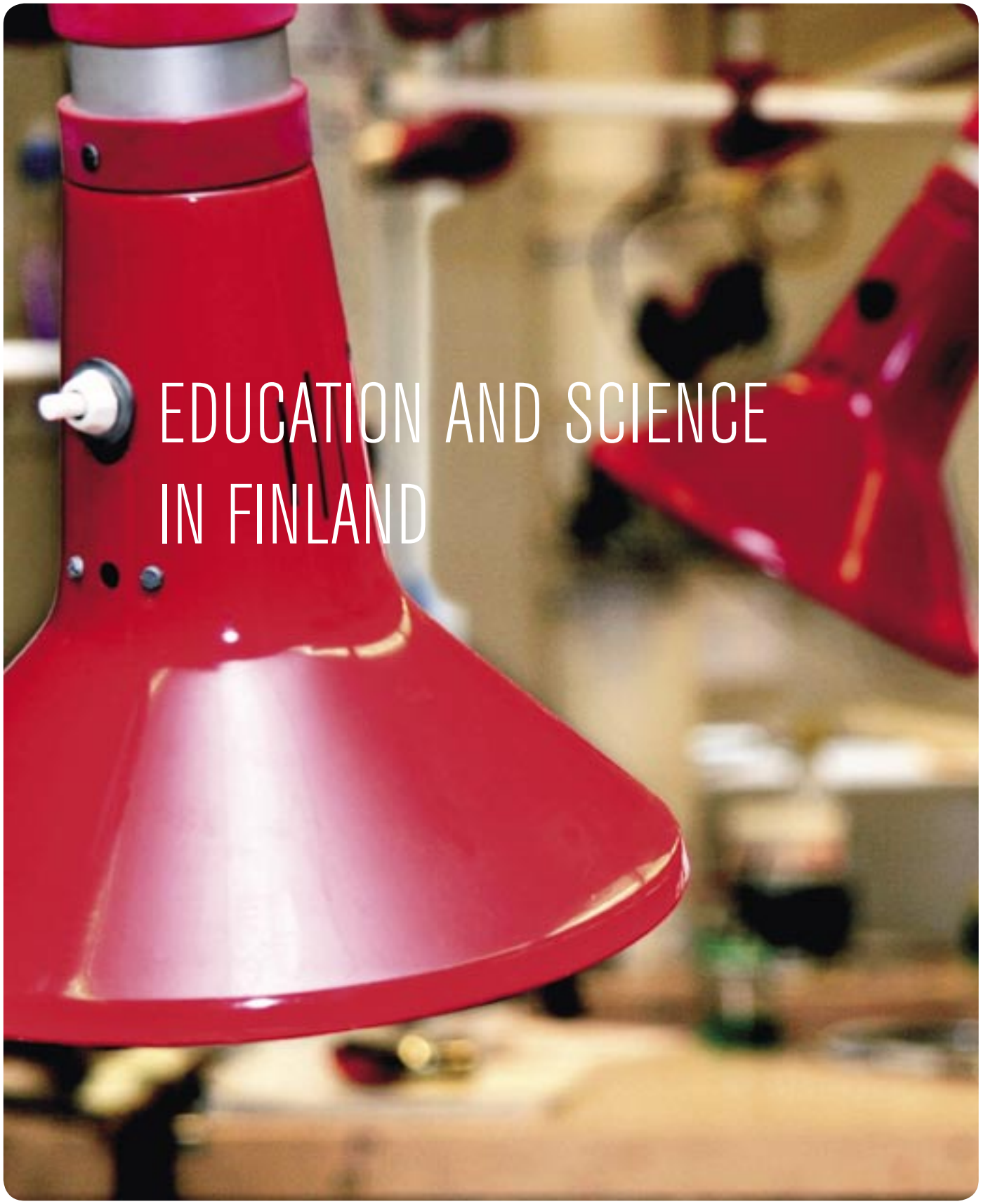

EDUCATION AND SCIENCE IN FINLAND

Elvi Rista

EDUCATION AND SCIENCE IN FINLAND

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TRENDS IN FINNISH EDUCATION AND SCIENCE POLICY

Finnish education and science policy emphasises quality, efficiency, equality and the international nature of science and promotes the competitiveness of the Finnish welfare society. Sustainable economic development will continue to be the best way to ensure the nation's cultural, social and economic welfare in the years to come. The basic principles of Finnish education and science policy are in line with the European Union's Lisbon strategy.

Fundamental educational rights are enshrined in the Constitution of Finland. Every Finnish resident is guaranteed an equal opportunity to obtain education and develop themselves, according to their abilities and needs and irrespective of their financial means. General compulsory schooling and the right to receive pre-primary and basic education free of charge are provided by law, but also tuition in other education and training leading to an educational qualification is free, including university postgraduate education.

Parliament passes legislation governing education and science and determines the basic principles underpinning education and science policy. The Government and the Ministry of Education, as part of it, are responsible for preparing and implementing education and science policy. The Ministry of Education is responsible for education and training funded from the state budget. The Government adopts a development plan for education and research every four years.

Objectives

The priorities in educational development are to enhance competence and raise the level of education among the population and in the labour force; to improve the efficiency of the education and training system; to prevent social exclusion among children and young people; and to enlarge adults' opportunities for education and training. Special attention is paid to internationalisation and the quality and effectiveness of education, training and research.

Lifelong learning is a viewpoint permeating all policies related to learning with a view to ensuring equal opportunity in education and a high level of education among the population as a whole. This policy entails that everyone has sufficient learning skills and opportunities to develop their knowledge and skills at all ages and in different environments.

To this end, qualification-oriented education and training is offered to the whole youth age group (16–21) and measures are taken to upgrade and update adults' competencies. As the population grows older, it is essential to accelerate young people's transition to further and higher education and, subsequently, to the labour market by streamlining student selection procedures, speeding up graduation and enhancing recognition of prior learning.

The starting point in the development of *general education* is to guarantee basic educational security for everyone, irrespective of their place of residence, language and financial status. Two of the foremost reforms geared to improve children's and young people's well-being have been to institute the right to pre-primary education and morning and a system of afternoon activities for schoolchildren.

The objective of *general upper secondary education* is to provide a good all-round education and to build a foundation for further studies. In the past ten years, the upper secondary school has been developed towards greater flexibility and a larger freedom of choice for students, thereby improving their motivation. The current focus in development is on content renewal.

The objective of *vocational education* and training is to guarantee access to skilled labour force and to support industry-driven innovations. Special attention is paid to improving the quality and effectiveness of training and its relevance to working life and to increasing appreciation of vocational skills. New challenges to development arise from European co-operation in vocational education and training, notably the Copenhagen process. Greater mobility among students and qualification-holders calls for the development of credit transfer systems and quality assurance in education and training.

In recent years, higher education policy has focused on the implementation of reforms required by the Bologna process in particular. The degree structures and scopes of studies at both universities and polytechnics are based on common European principles. Universities and polytechnics have developed quality assurance systems in line with European standards and practices.

The development of *polytechnic education* focuses on internationalisation and the quality of provision. To this end, measures have been taken to reform degree structures, step up study processes and facilitate international student and teacher mobility. In addition, polytechnics have enhanced their research and development activities which serve regional business and industry. One aim has been to reduce drop-out rates and shorten the duration of studies.

The main focus in the reform of *university education* and degrees has been to step up internationalisation and improve the quality of instruction and student counselling with the aim of shortening study times and speeding up graduation and entry to the labour market. The degree structure reform and the introduction of individual study plans have made university studies more flexible and promoted lifelong learning.

The role of *adult education and training* is to provide working-age and other adults with knowledge and skills they need for continuous development of their competencies and for other self-development which enhances equality and active citizenship. The provision of qualifying and continuing education and training geared to the working-age adult population has been expanded at all levels of education. The enlarged supply of open polytechnic and university education and online instruction has been supported by the development of information and counselling services and mature students' financial aid. Special efforts have been made both in vocational and liberal adult education to increase educational opportunities for groups that are under-represented in adult learning.

Science policy seeks to raise the standard of research and improve the effectiveness and international visibility of Finnish scientific research. The aim is to maintain the level of Finnish R&D funding on a par with the world top countries. Input is focused on enhancing the quality of scientific research and strengthening researcher training and research infrastructures. Recent development targets include the professionalisation of research careers, commercialisation of research findings, and co-operation between higher education institutions and business and industry. Cutting-edge research requires both national and international networking and close co-operation at all levels.

Results

According to international surveys, Finland is one of the most competitive countries in the world. This success can be attributed to an efficient and open public sector and an egalitarian, high-quality education and research system.

According to the OECD PISA survey, young Finns' knowledge and skills rank among the best in the OECD countries in mathematics, science and reading literacy. The proportion of poorly performing pupils is small compared with other OECD countries, and regional and inter-school differences are comparatively small.

In adult education and training, the number of participants has grown by 200,000 people over the past ten years to the extent that the participation rate is now 54% of the working-age population. However, participation is less evenly distributed among different population groups than in other Nordic countries.

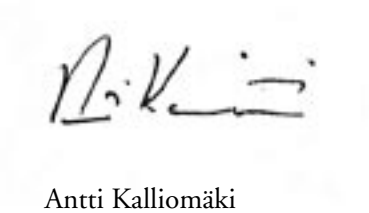
A research career has attraction in Finland, and there has been no shortage of gifted doctoral students. More and more publications by Finnish researchers are appearing in international publication series and cited frequently in research. The number of mathematics, engineering and science students in Finland is high in international terms.

Future challenges

A future challenge for Finnish education policy will be to further strengthen the prerequisites of the public education system. We must pay constant attention to enhancing competitiveness and innovativeness by means of education and science policy. The aim is to create clusters of expertise of the highest international standard in fields of major relevance to the national economy and welfare.

Our network of schools and higher education institutions covers the country well, but there are some inevitable reforms we must make in response to the substantial demographic changes and internal migration, which is expected to continue to be strong. By rationalising the school network we also make savings, which can be channelled back to education and research.

Internationalisation is a precondition for the success and renewal of the Finnish economy. International co-operation and interaction is especially important in education and research. This is something that we are ready to invest in. Finland welcomes international students, researchers and teachers!



Antti Kalliomäki
Minister of Education

THE EDUCATION SYSTEM

The welfare of Finnish society is built on education, culture and knowledge. All children are guaranteed opportunities for study and self-development according to their abilities, irrespective of their place of residence, language and financial status. All pupils are entitled to competent and high-quality education and guidance, a safe learning environment and well-being. The flexible education system and basic educational security make for equity and consistency in results.

The Finnish education system has three levels: basic education, comprising primary and lower secondary levels; upper secondary education and training; and higher education. Pre-primary education is available to children in the year preceding compulsory schooling. Basic education is uniform nine-year general education given in comprehensive schools. The upper secondary level comprises vocational education and training and general education. Higher education is provided at polytechnics and universities.

Adult education and training is available at all levels. In addition, liberal adult education offers a wide range of recreational studies and education which develop competencies and citizenship skills.

In Finland, pre-primary education, basic education and upper secondary education and training, complemented by early childhood education and before- and after-school activities, form a coherent learning pathway that supports children's growth, development and well-being.

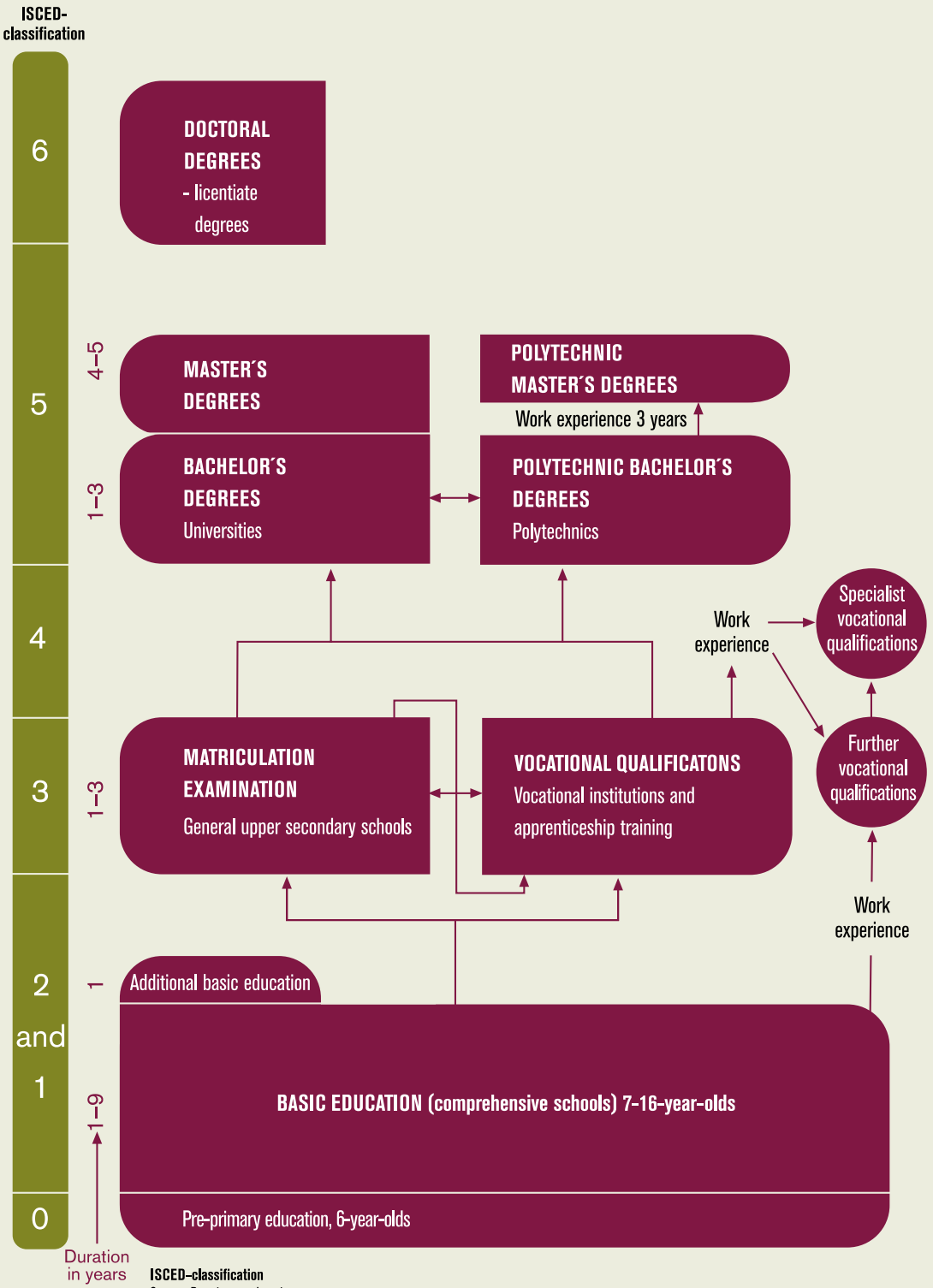
Students' transition from one level of education to the next is safeguarded by legislation. Both general and vocational upper secondary certificates provide eligibility for further studies in universities and polytechnics.

Information society skills

In recent years, attention at all levels of education has focused on strengthening knowledge and skills required in the information society and on developing electronic services. The aim is to provide equal opportunities for all citizens to function in a knowledge-based society. Input has also been made into developing the use of information and communications technologies (ICT) and electronic materials in research. The goal is an open and secure network society with a high level of information society skills.

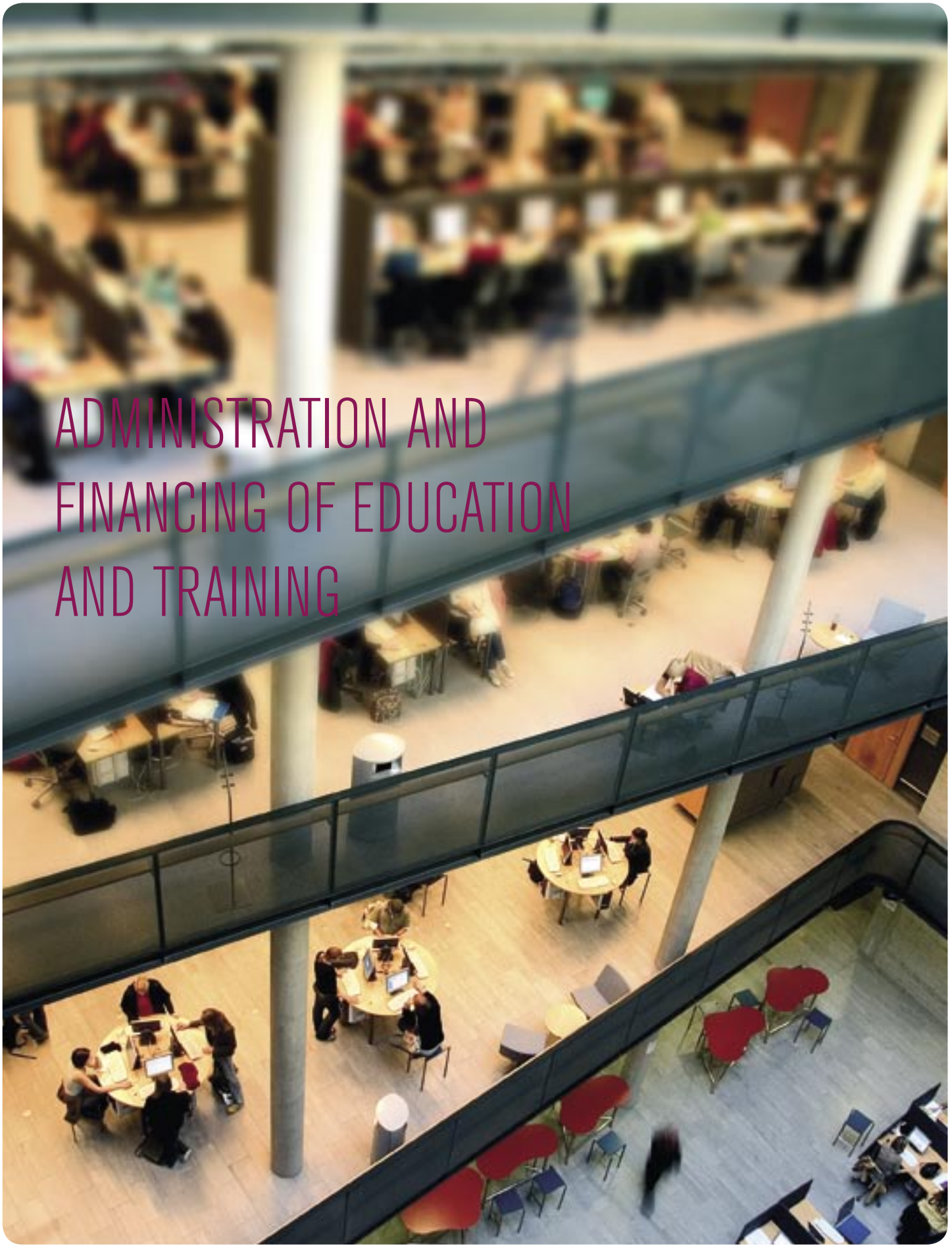
Extensive use of information and communications technologies is encouraged in studies and instruction. Pupils in basic education learn fundamental ICT skills, which are further developed at the upper secondary level; ICT professionals and researchers are trained in higher education. Finland has made special investment in teacher training and the development of virtual teaching materials and learning environments.

THE FINNISH EDUCATION SYSTEM



ISCED–classification

0	Preprimary education
1	Primary education or first stage of basic education
2	Lower secondary or second staga of basic education
3	(Upper) secondary education
4	Post secondary nontertiary education
5	First cycle of tertiary education
6	Second cycle of tertiary education



ADMINISTRATION AND FINANCING OF EDUCATION AND TRAINING

Satu Haavisto

Parliament passes educational legislation and determines the general lines of education policy. The Government and, as part of it, the Ministry of Education are responsible for planning and implementing education policy.

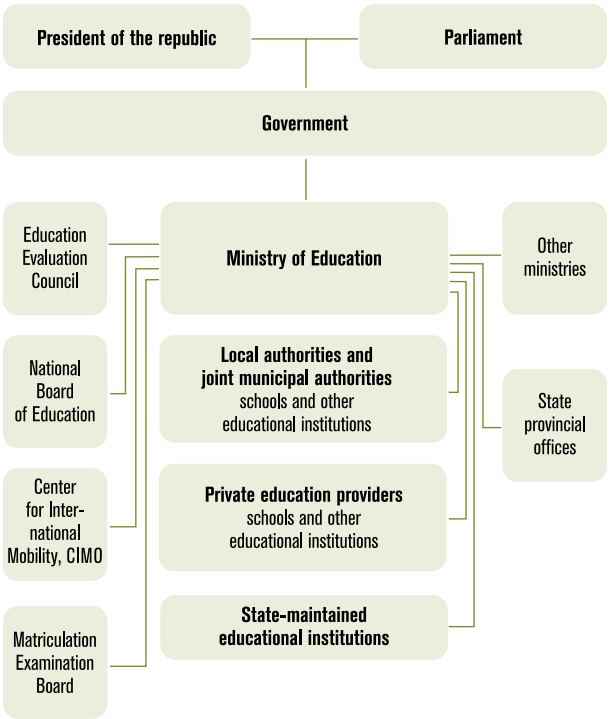
As the highest education authority in Finland, the Ministry of Education is responsible for implementing the education policy adopted by Parliament and the Government. The Ministry drafts legislation pertaining to education and training, prepares the education and culture main class for the state budget proposal and drafts government decisions relating to education. Almost all forms of publicly funded education and training are subordinate to or supervised by the Ministry of Education.

The key education agency is the National Board of Education, which administers matters relating to comprehensive schools, upper secondary schools and vocational education and training. The National Board issues national core curricula and regulations governing pupil and student assessment.

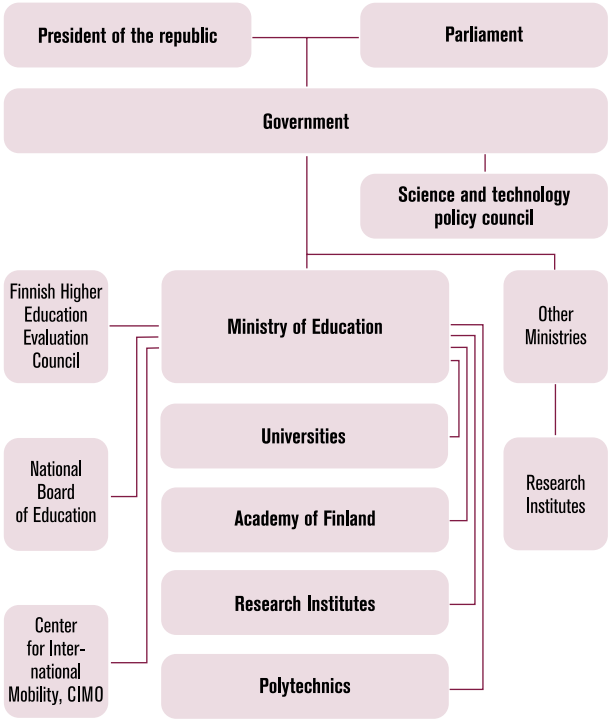
The regional administration is run by five State Provincial Offices, which also deal with educational matters, notably monitoring education and training and legal protection in the sector. In addition, the State Provincial Offices provide information-based guidance for schools and local authorities within their regions and evaluate basic services.

The local authorities (municipalities) have a statutory duty to provide pre-primary and basic education. They also arrange upper secondary education and training. Local authorities enjoy self-government guaranteed by the Constitution and their duties and responsibilities are based on legislation. The local level is largely responsible for the organisation and the forms of provision in education. Education providers and maintaining organisations decide on practical arrangements, such as teacher recruitment.

Administration of basic and upper secondary education



Administration of the higher education system and research



There are several independent expert bodies in the field of education and training. The Matriculation Examination Board is responsible for managing the national matriculation examination taken at the end of upper secondary school and for setting and assessing the tests. Expert bodies in vocational and work-based training include field-specific National Education and Training Committees and a National Co-ordination Group for Education and Training. In addition, there are separate bodies responsible for the evaluation of education and training. The Adult Education Council appointed by the Government for a term of three years at a time is the advisory body in matters relating to adult education and training.

The Centre for International Mobility (CIMO), operating under the auspices of the Ministry of Education, was established in 1991 to promote international exchanges in education and training. CIMO co-ordinates and implements exchange and scholarship programmes and is responsible for implementing nearly all of the European Union's education, training, culture and youth programmes at the national level.

Steering

The Ministry of Education steers the implementation of education policy in the entire education system, with the exception of some fields subordinate to other ministries. The main steering instruments employed by the Ministry of Education are legislation, funding, information-based guidance, and licensing policy. 'Steering' refers to all mechanisms used to regulate operations and implement stated objectives.

Normative steering comprises Acts, Decrees, the national core curricula and qualification requirements, and other rules and regulations. The funding instruments include government transfers to local authorities and performance management; these are complemented by information-based guidance. The evaluation of education and training has been gaining importance as a steering tool.

The fundamental statutes in general education are the Basic Education Act and Decree, the General Upper Secondary School Act and Decree, and the Act and Decree on Basic Education in the Arts. Other key tools in normative steering are government resolutions on the objectives of education and training and on the allocation of lessons hours, and the national core curricula issued by the National Board of Education.

Vocational education and training (VET) is governed by the Vocational Education and Training Act and Decree. Other important steering mechanisms include authorisations to provide vocational education and training, which are granted by the Ministry of Education; Government and the Ministry of Education resolutions on the structure of qualifications and the core subjects; and the national core curricula issued by the National Board of Education.

In higher education the key steering instrument is performance management. Polytechnics and universities agree with the Ministry of Education on how to promote the objectives of higher education policy in practice. The polytechnics' and the universities' performance agreements specify targets both for each institution and for the entire higher education sector for a three-year period.

Public expenditure on education and training as a percentage of the gross domestic product, 1995–2004*

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004*
Public expenditure on education and training, EUR million	6 500	6 900	7 000	7 300	7 600	8 000	8 400	8 900	9 400	9 700
GDP, EUR million	96 100	99 400	107 900	117 400	120 100	130 900	136 400	140 900	143 800	149 700
Percentage	6,8 %	6,9 %	6,5 %	6,2 %	6,3 %	6,1 %	6,2 %	6,3 %	6,5 %	6,5 %

Source: Statistics Finland, data from the UOE survey (UNESCO, OECD, Eurostat)

Public expenditure on education and training includes expenditure by the central government and local authorities/joint municipal authorities, and government expenditure on student financial aid.

*Advance data

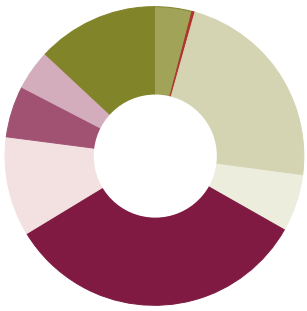
Normative steering in adult education and training largely rests on legislation governing vocational adult education and training, the financing of education and culture, and liberal adult education. As regards liberal adult education, the Ministry's main steering tools are authorisations to maintain adult education institutions and resource allocation. Information-based guidance is being piloted in liberal adult education.

Financing

The Ministry of Education finances general education, VET, polytechnic education and R&D, university education and research, continuing vocational and professional education, liberal adult education, and morning and afternoon activities for schoolchildren.

The government grants statutory and discretionary financing for operating costs and for construction and renovation projects to local authorities and other education providers. Government funding for local authorities is not earmarked, which means that the local authorities are free to decide how to use it. Statutory government funding covers 45% of operating costs.

2006 State Budget: Education and science



Ministry of Education	241
National Board of Education	19
University education and research	1 353
Polytechnic education	365
General education	1 970
Vocational education and training	639
Further vocational training and liberal adult education	331
Science	258
Student financial aid	777
Total	**5 953**

Funding is based on certain quantitative indicators, such as the number of pupils/students, other quantitative criteria, and unit costs determined each year in advance.

Local authorities provide almost all pre-primary, basic and general upper secondary education. About half of the vocational education and training providers are local authorities or municipal education consortia. In addition, registered associations and foundations may function as education providers.

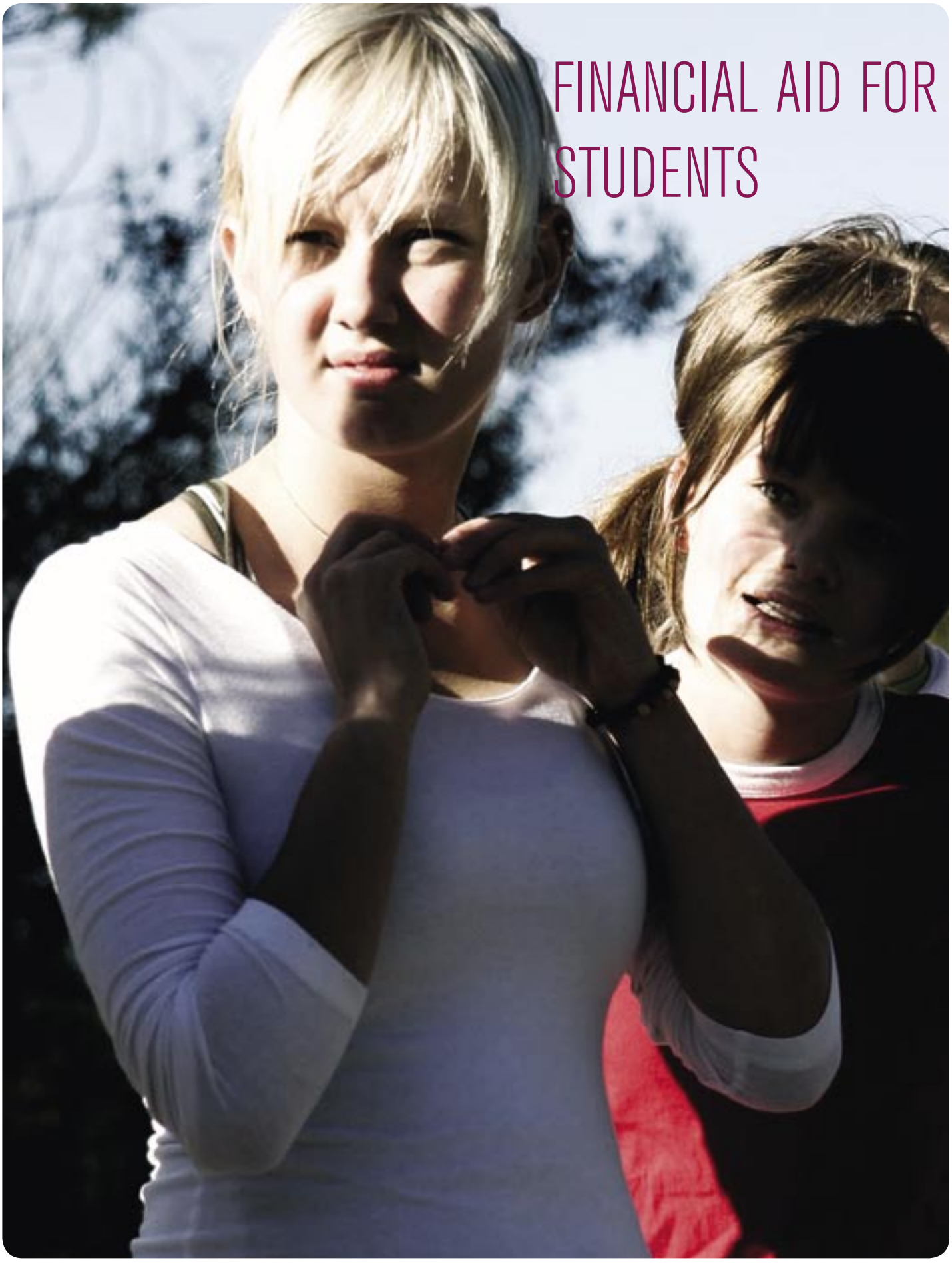
Evaluation

Education providers have a statutory duty to evaluate their own operations and participate in external evaluation. The purpose of evaluation is to collect information in support of education policy decisions, information-based guidance and performance management. The purpose of evaluation is to bring about continuous improvement of the quality of education, training, research and other activities. Evaluations relating to education and training are carried out at local, regional and national levels. Finland also participates in international reviews.

Evaluation of universities and polytechnics is the responsibility of the Finnish Higher Education Evaluation Council (FINHEEC), which operates in conjunction with the Ministry of Education. The FINHEEC is an independent expert body responsible for helping higher education institutions and the Ministry of Education to evaluate higher education institutions.

The expert body in evaluation of general, vocational and adult education is the Finnish Education Evaluation Council, which functions as a network of experts. The duties of this independent Evaluation Council include evaluation of education, training and learning, development of evaluation and promotion of research into evaluation and assessment. Evaluation activities support the Ministry of Education, education providers and educational institutions.

FINANCIAL AID FOR STUDENTS



Finland guarantees post-compulsory studies for the whole school-leaving age group. The aim is to improve people's life careers and their quality of life, prevent social exclusion and safeguard effective functioning of society and the labour market. Everyone has equal opportunity for education and training regardless of their financial situation.

Financial aid and other social benefits make for efficient studies. Financially secure students can plan their studies and study full-time, which shortens study times. Student financial aid ensures subsistence for the duration of full-time study. The financial aid system is developed in line with education policy objectives.

Schools monitor the health and well-being of their pupils and students. Pupils in basic education and at the upper secondary level have the right to welfare services free of charge, such as school health care and multiprofessional support for their growth.

Pupils in basic education and students at upper secondary level also receive free daily meals, and higher education students have access to subsidised meals. Pupils in basic education are entitled to free school transport on certain conditions. In addition, upper secondary students can apply for school travel subsidy.

Instruction is provided free of charge by all publicly funded educational institutions at all levels of education. Upper secondary and higher education students buy their own textbooks.

Student financial aid for full-time studies

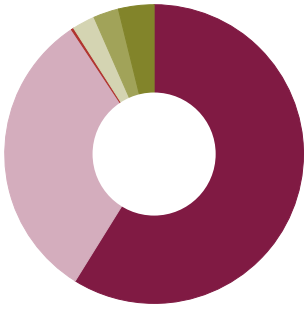
Student financial aid consists of a study grant, a housing supplement and a government-guaranteed student loan. Financial aid is granted for studies in upper secondary schools and vocational education and for degree students at the higher education level. To receive financial aid, which is means-tested, students must study full-time and progress in their studies. In higher education, student financial aid depends on the student's own income, whereas the support of upper secondary students aged under 20 depends on their parents' income.

The amount of aid depends on the student's age, the type of accommodation, the level of education and means-testing. It is also possible to receive student financial aid for studies abroad, as long as these correspond to studies eligible for aid in Finland.

Student loans are guaranteed by the government up to 300 euros per month in higher education. Students do not need any other securities for the loan. Interest and other loan terms are agreed by students and their banks. The repayment period is usually twice as long as the loan period. Students starting their higher education studies in or after the 2005/2006 academic year are entitled to a tax concession upon graduation, provided that they complete their degree within the normative time and have used their loan to finance their studies.

Information on the social and financial situation of higher education students in Finland and ten other European countries is available in 'Eurostudent Report 2005', which can be accessed at www.his.de/eurostudent.

Expenditure on student financial aid in 2005 (EUR million)



Study grant	429
Housing supplement	232
Interest subsidy and assistance	2
Loan guarantees	18
Meal subsidy	20
School transport subsidy	28
Total	**729**

Source: The Social Insurance Institution of Finland

Beneficiaries of student financial aid in 2005

Study grant	No. of beneficiaries
Universities	87 000
Polytechnics	87 100
Vocational institutions	82 600
Upper secondary schools	26 100
Other educational institutions	5 700
Foreign educational institutions	4 400
Total	**292 900**
Housing supplement	194 000
Beneficiaries of government loan guarantees	117 600
Beneficiaries of school transport subsidy	49 600

Source: The Social Insurance Institution of Finland

Amount of aid (€/month)

	Higher education	Vocational or general upper secondary education
Study grant	259	21–213
Housing supplement	179	179
Study loan	300	160–220
Total	**738**	**181–612**

Source: The Social Insurance Institution of Finland

Financial aid for adult students

There is a special scheme for supporting people who take leave of absence from their work to pursue full-time studies. This adult students' financial aid is based on the level of income before studies. Its purpose is to ensure a moderate income during studies. In addition, those eligible to receive adult students' financial aid can also apply for government-guaranteed student loans. Adult students who are not eligible in the adult student scheme may be granted regular student financial aid for the duration of their full-time studies.

Adults can pursue self-motivated studies during a job alternation leave, which is based on an agreement between an employee and an employer. The employee receives an allowance during the leave of absence, which is equivalent to 70–80% of their unemployment benefit. Unemployed adults who want to pursue self-motivated studies receive training allowance.

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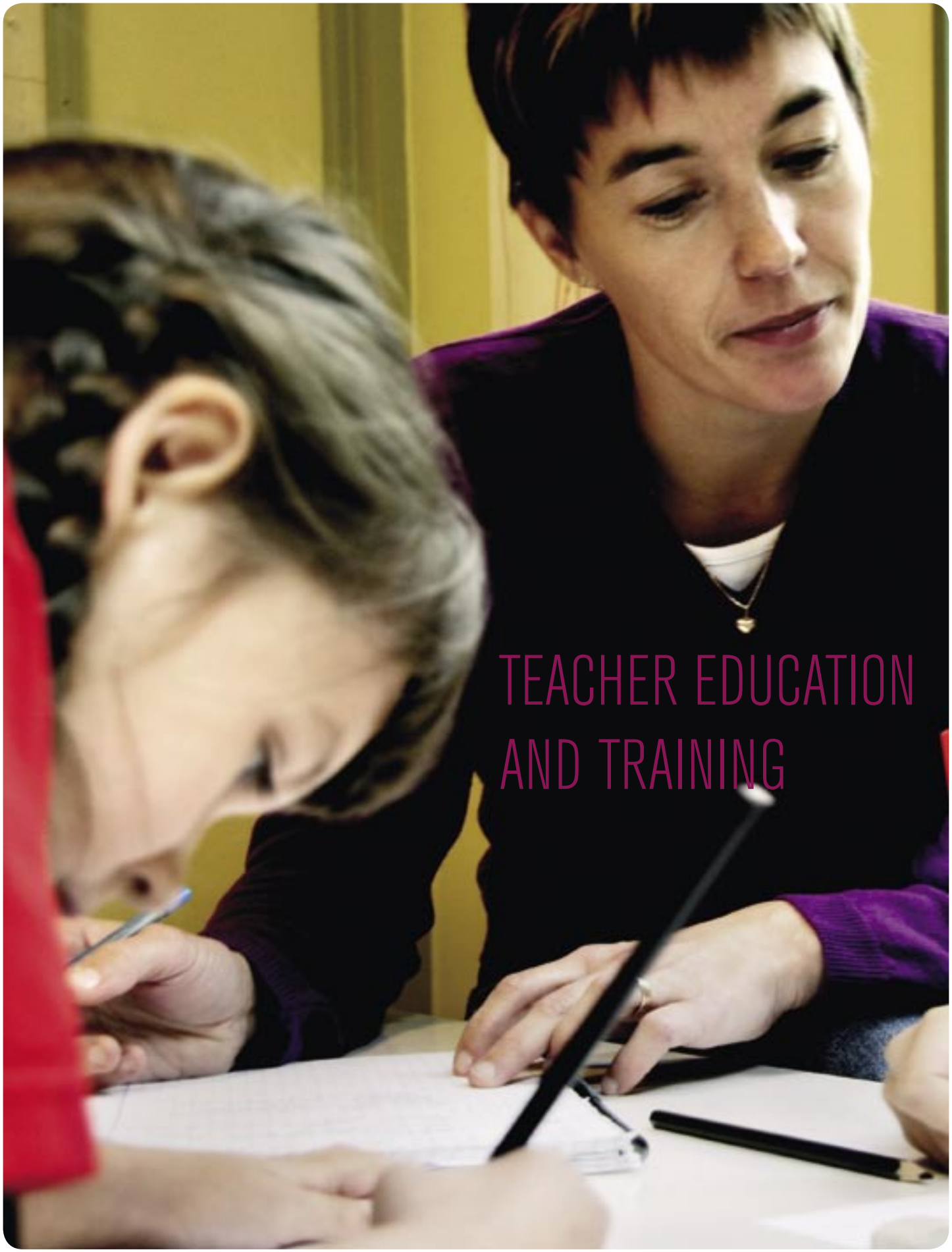


TEACHER EDUCATION AND TRAINING

Elvi Rista

Finns hold the teaching profession in high esteem and only a small proportion of those applying for teacher education are admitted. Teachers are educated at universities, where they complete a higher university degree (Master's). Teacher education is provided by 11 universities, one of which is a Swedish-language institution. University teacher education aims to provide students with resources to function independently as teachers, instructors and educators.

Class teachers teach all subjects in years 1–6 of basic education (primary level). They may also work in pre-primary education and as instructors of extracurricular morning and afternoon activities. Class teachers major in education sciences. The scope of the degree is 300 ECTS credits. Class teachers can also study for a subject teacher qualification.

A Master's degree is also the basic requirement for subject teachers working with year-classes 7–9 of basic education (lower secondary level), for upper secondary teachers, for teachers of general subjects in vocational education and training, and for teachers in adult education and training. The degree is 300–350 ECTS credits. In addition to studies in the major and minor subjects, subject teacher qualifications comprise pedagogical studies of at least 60 ECTS credits, including teaching practice.

Universities also educate special-needs teachers and guidance counsellors. Special-needs teachers work in basic education and in vocational education and training. Guidance counsellors mostly work with yearclasses 7–9 of basic education, upper secondary schools and vocational institutions.

Vocational teacher education

Vocational teachers are trained by five vocational teacher education colleges attached to polytechnics. These provide pedagogical education for those who want to teach in vocational institutions, polytechnics, liberal adult education, and adult education and training.

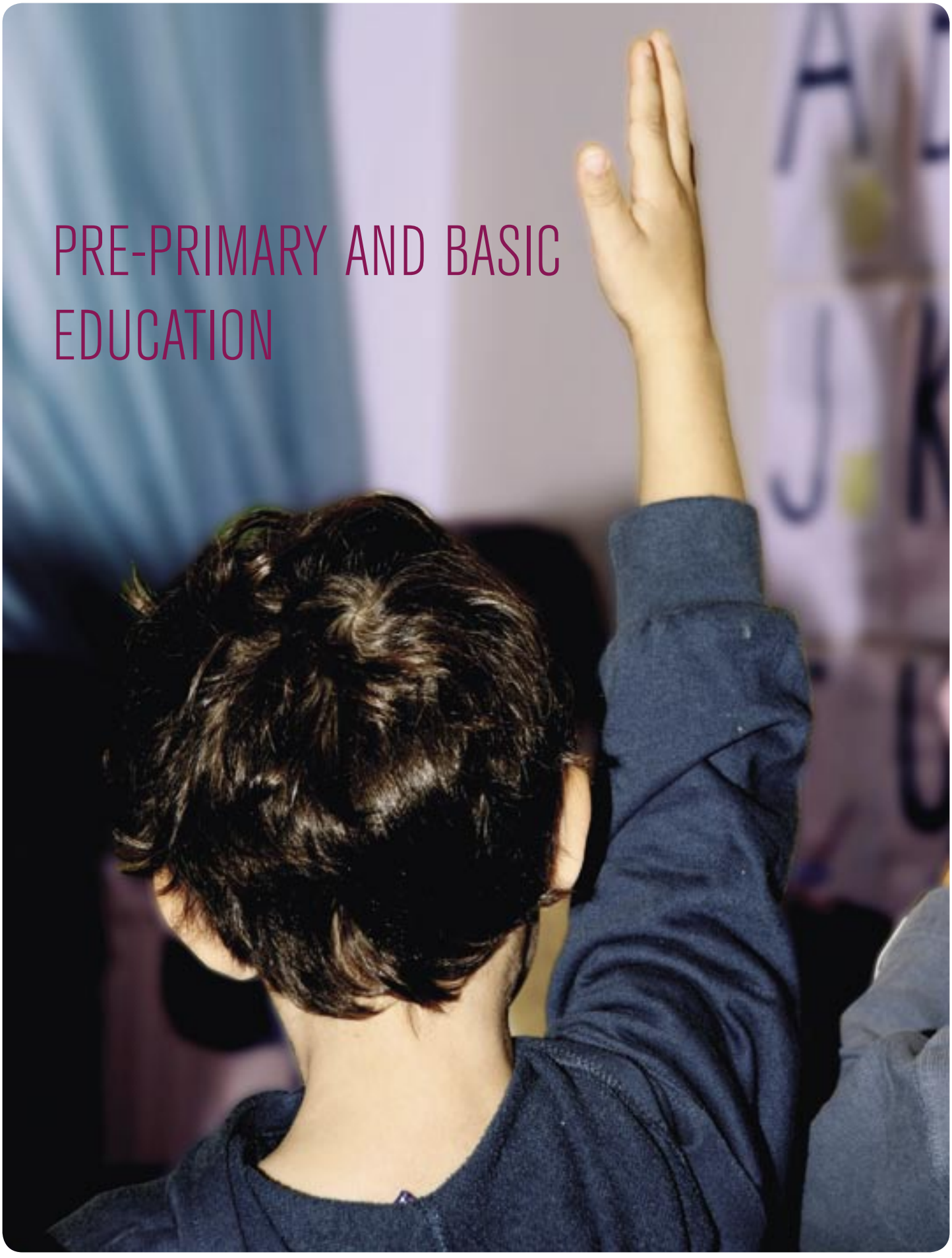
The training is 60 ECTS credits, comprising studies in education, vocational pedagogy and teaching practice. It provides knowledge and skills needed to instruct different kinds of learners and to develop teaching in response to changes in occupations and the world of work.

Teachers' continuing education

Teachers already active in working life can update their professional competence on an ongoing basis. The purpose of continuing professional education is to maintain and update teachers' pedagogical skills. It has been found that continuing education also promotes teachers' satisfaction at work. Continuing training is voluntary for teachers, but the majority participate in training every year. This training is provided free of charge for teachers, who also receive full pay during training days.

The responsibility for teachers' in-service training mainly rests with employers, who usually are local authorities. They have an obligation to provide teachers with a minimum of three days of training every year. In addition to this, the central government arranges continuing training, mostly relating to the use of ICT in education. Other topical themes are counselling and guidance; development of special-needs education; curricular development; virtual pedagogy and media education; mathematics and natural sciences; languages; and development of vocational education and training.

PRE-PRIMARY AND BASIC EDUCATION



Elvi Rista

Pre-primary and basic education create a foundation for lifelong learning. Pre-primary education promotes children's growth, development and learning opportunities equally throughout the country. It develops children's social and ethical skills, oral expression, language awareness and skills relating to literature and mathematics.

The objective of basic education is to support pupils' growth into humane and ethically responsible members of society and to provide them with knowledge and skills they will need in life. Education must promote civilisation and equality in society and enable pupils to participate in education and otherwise develop themselves during their lives. Another aim is to guarantee educational equality throughout the country.

The key development targets in education are to consolidate the basic educational security, develop educational contents and teaching methods, enhance well-being and learning environments, prevent social exclusion, and strengthen the steering system in education.

All children permanently residing in Finland have a statutory obligation to complete the basic education syllabus. Children can do this either by attending comprehensive school or by acquiring equivalent knowledge and skills in some other way. Virtually all children (99.7%) complete basic education. Children can participate in pre-primary education in the year preceding compulsory schooling.

Pre-primary education

Local authorities have a statutory duty to provide pre-primary education. For children participation is voluntary, but almost all children go to pre-primary school, which usually starts at the age of six. Pre-primary education is geared to develop children's learning skills as part of early childhood education and care.

Early childhood education and care is an entity of care, education and instruction. The methods used in it – play, physical activities, problem-solving and concrete experiments – support children's all-round development. The average length of a pre-primary school day is four hours.

Basic education

Finnish children start their actual schooling at the age of seven at a comprehensive school. Basic education is provided free of charge for all and the nine-year education is the same for all pupils. By completing basic education, pupils have done their compulsory schooling. It does not lead to any specific qualification, but the leaving certificate gives eligibility for all types of upper secondary education and training.

A school year is 190 school days, starting in mid-August and ending in early June. The summer holidays are over two months.

The maximum duration of a school day is five lessons during the first two years of basic education and up to seven lessons after that. This makes between 19 and 30 hours a week, depending on the pupils' age.

The government determines the national objectives of basic education and the allocation of lesson hours between different subjects. The National Board of Education draws up the national core curriculum, which individual local authorities and schools use as a basis for their own curricula.

The language of instruction is mostly Finnish or Swedish, but also the Sami, Roma or sign language

Comprehensive school pupils in 2005

Grade:									
Pre-primary education	1	2	3	4	5	6	7	8	9	Additional education
57 986	57 546	59 867	60 941	63 466	65 070	65 238	67 365	66 474	66 545	2 385

Total 632 883

Source: Statistics Finland

may be used. Foreign languages may also be used in instruction, provided that it does not jeopardise pupils' learning. Sami-speaking pupils residing in the Sami home area in Lapland have the right to be taught primarily in the Sami language. Pupils with hearing impairments must be taught in sign language, where necessary.

Subjects in basic education

- Mother tongue and literature
- Foreign language (A language)
- Foreign language (B language)
- Mathematics
- Environmental studies
- Biology and geography
- Physics and chemistry
- Health education
- Religion/Ethics
- History and social studies
- Music
- Visual arts
- Craft
- Physical education
- Home economics
- Guidance counselling
- Optional subjects

In years grades 1–2, 3–4, 5–6 and 7–9, the minimum number of weekly lessons is 19, 23, 24 and 30, respectively.

Special-needs education and additional basic education

Finnish schools provide special-needs education and additional education in support learning. A pupil who cannot follow education owing to a disability, illness, delayed development or some other reason can be admitted or transferred to special-needs education. Whenever possible, special-needs education is intergrated into regular education or given in a special class. It is also possible to extend the duration of compulsory schooling for special-needs pupils, in which case compulsory schooling starts in the year when the child turns six and lasts 11 years.

Young people who have completed the basic education syllabus can continue their education for one extra year. This voluntary '10th grade' is intended to help and encourage young people to continue their studies at the upper secondary level.

Morning and afternoon activities and basic education in the arts

Local authorities also organise voluntary extracurricular morning and afternoon activities for first and second year pupils and for all special-needs pupils in basic education. The purpose of these diverse, supervised activities is to support home and school education and promote children's well-being and emotional and ethical growth.

One form of these activities is extracurricular basic education in the arts. It is goal-oriented education progressing from one level to the next. It teaches children skills in self-expression and capabilities needed for vocational, polytechnic and university education in the chosen art form. The objectives and core contents are determined in national core syllabi devised by the National Board of Education for nine different art forms. The network of government-funded art education institutes comprises 88 music institutes and 23 schools in other arts. Moderate fees may be charged both for morning and afternoon activities and for basic education in the arts.

International comparisons of education

Finland has fared well in international comparisons, such as the OECD Programme for International Student Assessment (PISA), which assesses mathematics, science, reading literacy and problem-solving skills among 15-year-olds. In PISA the learning results of Finnish basic education pupils rated at the top of the list in the key subjects, while differences between pupils, schools and different regions were comparatively small.

There are many reasons for this success. The Finnish education system guarantees children and young people equal basic education, irrespective of their social status, gender and ethnic background. Education is provided free of charge, and the comprehensive services, such as school meals, school transport subsidies and pupil welfare services, are available to everyone free of charge. Teacher education guarantees instruction of a high standard. Responsibility for education rests with local authorities, in other words close to children and their homes. Finns believe in the benefits of education and there are long traditions for co-operation between homes, schools and different authorities.

One factor contributing to the high rate of reading literacy in Finland is the comprehensive library network. There are almost a thousand public libraries in

Finland, where everyone can borrow materials free of charge. In 2004, the number of loans exceeded 100 million, which makes about 20 loans per inhabitant.

Regardless of the good and consistent learning outcomes, Finland also has its share of pupils and students whose well-being and learning pose a major challenge to the education system. Early intervention and preventive action are a compassionate and economically profitable way to tackle the problem.

Providers of pre-primary and basic education

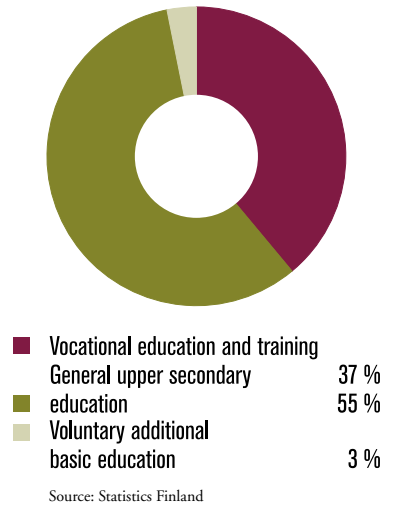
The network of comprehensive schools (3,579 in 2005) covers the entire country. The majority of pupils attend medium-sized schools with 300–499 pupils. The smallest schools have fewer than ten pupils and the largest over 900 pupils.

Local authorities provide education for children of pre-primary and compulsory school age living in their areas, and the central government shares the costs by granting statutory government transfers to education providers. The calculation of the statutory government transfer is based on a unit cost (€/pupil) determined annually by the Ministry of Education. In 2005, the government paid 57% and municipal authorities 43% of the cost of basic education.

Basic education for adult students

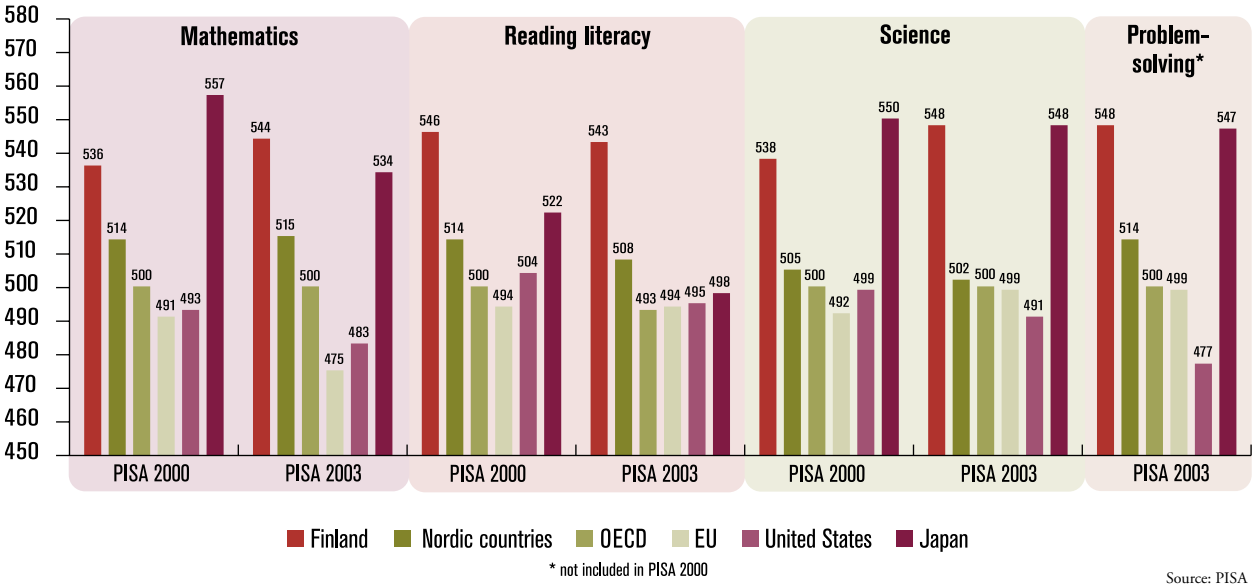
It is possible for adults to complete the entire basic education syllabus (44 courses) or study individual subjects. Basic education for adults is provided by adult upper secondary schools and folk high schools authorised by the government to provide basic education.

Placement of comprehensive school leavers in further education immediately after completion of basic education in 2004



Source: Statistics Finland

Development of average performance scores in PISA 2000 and PISA 2003 assessments



Source: PISA

Elvi Rista

UPPER SECONDARY EDUCATION AND TRAINING

The post-compulsory upper secondary level is divided into general education and vocational education and training. Both forms generally take three years and provide eligibility for further studies at universities and polytechnics.

The general upper secondary school provides non-vocational all-round education. Towards the end of the school, students usually take the national matriculation examination and receive a matriculation certificate in addition to the school-leaving certificate. Students in vocational education and training study for a vocational qualification. It is possible to take the initial qualification and further and specialist qualifications as a competence-based qualification, in which there are no requirements concerning the way in which the knowledge and skills were acquired.

GENERAL UPPER SECONDARY EDUCATION

General upper secondary education develops all-round general knowledge. Its objective is to support students' growth into balanced members of society and provide skills and knowledge needed for further studies. In addition, the upper secondary school equips students for lifelong learning and self-development.

General upper secondary education is course-based and ends in a national matriculation examination. The upper secondary school does not provide any specific qualifications but gives eligibility for studies in universities, polytechnics or vocational institutions.

The admission requirement for general upper secondary education is a school-leaving certificate from basic education. Students apply to general and vocational education in a joint application system. If the number of applicants exceeds the places available, the selection is based on students' school reports. The drop-out rate is low.

Some upper secondary schools specialise in a certain subject, such as sports, art or music. In addition, some upper secondary schools provide education for and end in an international examination.

General upper secondary studies

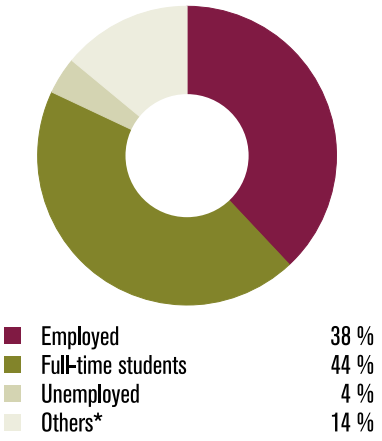
Upper secondary school students are typically aged between 16 and 19 and generally complete the syllabus in three years. Adults can study upper secondary syllabi and take the matriculation examination in adult upper secondary schools and in special adult programmes provided by ordinary upper secondary schools. Adult classes are usually arranged in the evenings. It is also possible to study only one or some subjects either for self-improvement or in order to raise former grades.

General upper secondary school studies are in the form of courses, which are 38 lesson hours on average. The entire upper secondary school is a minimum of 75 courses. Adult upper secondary education comprises a minimum of 44 courses of 28 lesson hours on average.

The general objectives and allocation of lesson hours between different subjects, subject groups and guidance counselling are decided by the Government. The National Board of Education decides on the aims and core contents of instruction, recording them in a national core curriculum, which education providers and schools then use as the basis for their curricula.

Tuition is provided free of charge for students who complete the entire upper secondary syllabus. Fees may be charged for studies in individual subjects. Students buy their own textbooks and pay a fee for the matriculation examination

Number of upper secondary school students and certificates



Source: Statistics Finland

Matriculation examination

The national matriculation examination held at the end of upper secondary school assesses the achievement of the knowledge and maturity defined in the curriculum and the objectives set for upper secondary education. The matriculation examination is arranged twice a year, in the spring and autumn. Students can take all the tests in one examination or over a maximum of three successive examination periods.

The matriculation examination includes four tests at minimum. The only compulsory test is the mother tongue test (Finnish/Swedish/Sami). For the three other tests, the candidates have a choice between the second national language (Swedish/Finnish), a foreign language, mathematics and general studies. It is also possible to take more than four tests.

The matriculation examinations are managed and the tests are set and assessed by an independent Matriculation Examination Board, which is appointed by the Ministry of Education for a period of three years at a time.

Providers of general upper secondary education

General upper secondary education is provided by local authorities, municipal consortia or organisations authorised by the Ministry of Education. The central government co-finances education with statutory government grants based on student numbers and unit costs per student. The majority of the 435 upper secondary schools in Finland are run by local authorities.

Number of upper secondary school students and certificates

	2002	2003	2004
New students	41 020	42 610	43 000
Matriculation examination certificates	36 200	35 170	34 620
Number of students	124 160	120 870	118 530

Source: Statistics Finland

VOCATIONAL EDUCATION AND TRAINING

The vocational education and training sector comprises initial and further and continuing training. It provides skills required for working life and a wide knowledge base for lifelong learning and self-development. A topical priority in further vocational training is to strengthen its role in developing and serving the world of work and to meet the skills needs of the SME sector in particular. Education and training for the vocational qualifications is provided in educational institutions and in the form of apprenticeship training.

Vocational education and training (VET) is intended both for young people leaving comprehensive school and for employed adults. Adults may study for the same qualifications as young people. They can also participate in further vocational training, which is upgrading built on an initial vocational qualification.

Vocational qualifications provide extensive basic skills for jobs in their fields and more specialised competence required in a specific sector. A vocational qualification gives eligibility for further studies at universities and polytechnics.

Number of students and qualifications in upper secondary and further vocational education and training

Upper secondary VET

	2002	2003	2004
New students	60 280	60 090	61 300
Qualifications awarded	32 440	35 220	37 610
Number of students	143 620	147 410	149 340

Further training

	2002	2003	2004
New students	20 540	23 910	24 000
Qualifications awarded	13 150	14 957	15 000
Number of students	36 990	42 120	43 000

Source: Statistics Finland

Vocational qualification

VET provides vocational competence needed to enter the labour market and for self-employment and entrepreneurship. The majority of students are comprehensive school-leavers, but about a fifth of VET provision is intended for adults who have prior knowledge and work experience.

VET is mostly provided by educational institutions, but apprenticeship training is also increasingly popular. Instruction is based on national core curricula prepared in co-operation with the world of work and approved for each qualification by the National Board of Education. VET providers devise their own curricula on the basis of the core curriculum.

VET is provided in eight fields and qualifies for more than a hundred occupations. There are a total of 116 study programmes leading to 52 different vocational qualifications. The qualifications have been developed in co-operation with working life representatives.

Young people generally apply for VET in the national joint application system. As a general rule, the entry

requirement is a school-leaving certificate from basic education. Upper secondary school graduates can also study for a vocational qualification. Their training takes a shorter time because some general studies included in the matriculation examination are counted towards the qualification.

The largest component in the vocational qualification is vocational studies. The overall extent of the qualification is 120 credits, comprising 90 credits of vocational studies, 20 credits of general core subjects and 10 credits of free-choice studies. All vocational qualifications include at least 20 credits of on-the-job learning. One credit is equivalent to 40 hours of work, including both instruction at school and independent study. The vocational qualification usually takes three years.

On-the-job learning

VET includes on-the-job learning of 20 credits or more. On-the-job learning means supervised, curricular training at a workplace, during which the students learn practical skills included in their qualification. The education provider and the employer's representative agree with the student on the objectives of on-the-job learning and its supervision.

Vocational skills demonstrations

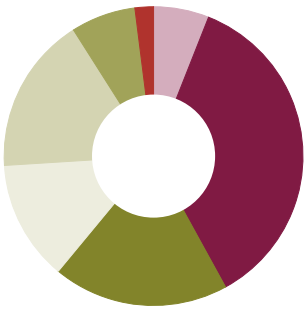
In VET leading to a vocational qualification, student assessment includes vocational skills demonstrations arranged in practical work situations or as practical assignments. The demonstrations are used to determine how well a student has learnt skills required in working life.

The objectives and assessment criteria of vocational skills demonstrations are determined in the national core curricula. The demonstrations are designed and implemented in co-operation with business and industry. A special body appointed by the education provider awards certificates for vocational skills demonstrations, which are recorded in and attached to the qualification certificate.

Competence-based qualifications for adults

Since the mid-1990's, working-age adults have been able to take competence-based qualifications, which assess knowledge and skills acquired in working life and/or in formal training. Adults can sit an examination for a competence-based vocational, further or specialist qualification, or for qualification modules. There are no national core curricula for competence-

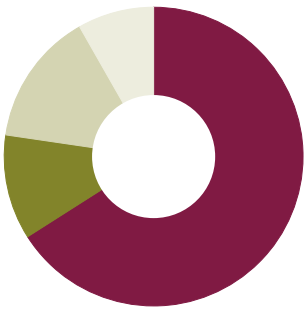
Number of students in vocational education and training by field



Natural Resources	6 %
Technology and Transport	36 %
Business and Administration	
Tourism, Catering and	19 %
Domestic Services	13 %
Health and Social Services	17 %
Culture	7 %
Leisure and Physical Education	2 %

Source: Statistics Finland

Placement in 2003 of those gaining vocational qualifications in 2002



Employed	64 %
Full-time students	11 %
Unemployed	14 %
Others*	8 %

* For instance, conscripts doing military service

Source: Statistics Finland

based qualifications; the candidates must fulfil specified requirements, drawn up in co-operation with experts from the world of work.

The qualifications are composed of modules. The requirements for a competence-based qualification are the same in level as a corresponding school-based vocational qualification. Further qualifications provide knowledge and skills corresponding to a skilled worker's competence, while specialist qualifications require in-depth vocational competence.

Even though it is possible to take competence tests without any preparatory training, most students participate in some training before the test. The need for preparatory training and its content and scope are determined in an individual learning plan drawn up for each student. The plan is based on an assessment of the student's prior learning in relation to the qualification requirements to ensure that the mature students do not need to study topics that they already master.

The number of competence-based qualifications has been growing rapidly. At present, there are over 100,000 students in preparatory training for competence-based qualifications, including apprenticeship training. There is also other vocational training for upgrading and updating skills needed in work, which does not lead to any specific qualifications.

The network of vocational education providers

The network of VET providers is composed of multi-field institutions, which are often regional. They provide both initial and further vocational training and serve small and medium-sized enterprises and entrepreneurs who want to upgrade their knowledge and competencies.

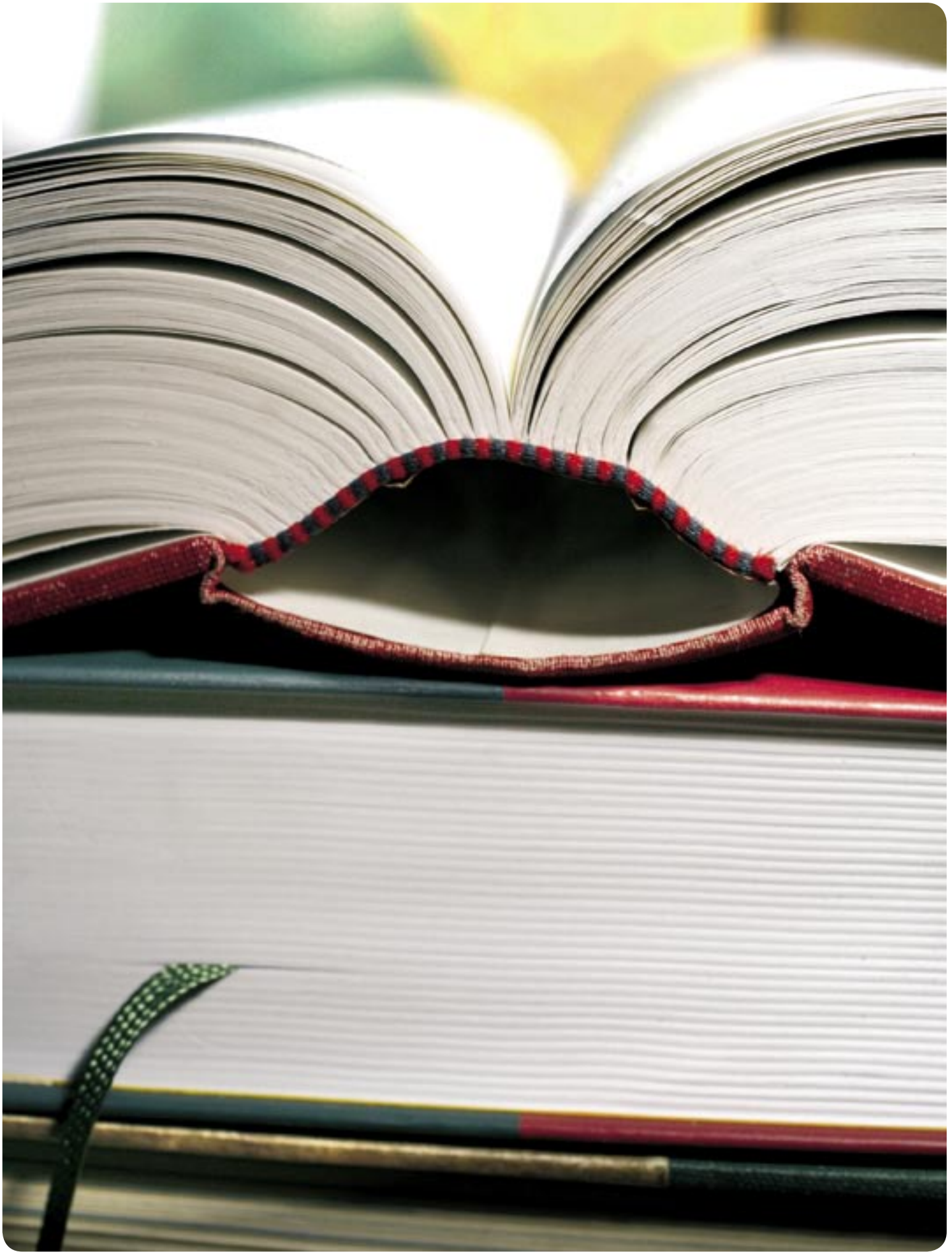
VET is either provided by vocational institutes, which is mostly contact teaching and on-the-job learning, or as apprenticeship training. Vocational institutes co-operate closely with business and industry.

At present, there are about 220 VET providers. The provider network is being developed further with a view to sufficiently large and diversified, or otherwise strong, institutions capable of developing working life and responding to its skills needs.

Practical arrangements are decided by VET providers, whose operations are governed by the objectives set in legislation and in the national core curricula. VET may be provided by local authorities, municipal training consortia, registered associations, foundations, the government or state enterprises.

Providers of qualification-oriented VET are accredited by the Ministry of Education. The authorisation to provide VET defines the fields provided and the number of students entitling to statutory government transfers. Providers decide independently on the use of funds granted to them and on the type of educational institution and units they run.

The impact of VET is measured by indicators such as placement of qualification-holders in employment and in further studies and the graduation rate. Part of funding is allocated on the basis of performance, which is measured by these indicators. One of the tools used to develop quality assurance is the Common Quality Assurance Framework (CQAF), developed within the Copenhagen process.



Petri Väänänen

HIGHER EDUCATION

The Finnish higher education system consists of two complementary sectors: polytechnics and universities. The mission of polytechnics is to train experts to serve the world of work and carry out R&D in support of education and regional development in particular. The mission of universities is to conduct scientific research and provide instruction and postgraduate education based on it.

The objective of higher education policy is to meet society's educational needs and produce a sufficient number of highly educated experts to meet the needs of business and industry and other social sectors. In a society increasingly based on knowledge, universities and polytechnics have an important role in promoting economic growth, welfare and new employment. In international terms, Finland makes significant input into higher education.

POLYTECHNICS

The mission of polytechnics is to provide higher education based on the requirements of working life and its development as well as on research and artistic premises and to prepare students for professional expert assignments. In addition, polytechnics carry out applied research and development work that supports the world of work and regional development and takes the economic structure of the region into account.

The polytechnic system was set up during the 1990s, when the level of education in former vocational and higher post-secondary colleges was raised and they were compiled into larger entities. The piloting of polytechnics got underway in 1991–1992 and the first polytechnics started to operate on a permanent basis in 1996. Polytechnics are multidisciplinary and regional higher education institutions focusing on the world of work and regional development.

There are currently (in 2006) 29 polytechnics, seven of which are maintained by local authorities and 11 by joint local authorities and private organisations. In addition, there are Åland University of Applied Sciences, operating in the autonomous Åland Islands, and the Police College of Finland, which is subordinate to the Ministry of the Interior.

In their objectives, polytechnics emphasise the development of learning processes, quality enhancement, innovation and internationalisation.

Polytechnic Bachelor's and Master's degrees: entrants, degrees awarded and student numbers

Polytechnic Bachelor's degree

	2002	2003	2004	2005
Entrants	31 420	32 840	32 690	33 260
Degrees	20 480	20 500	20 670	
Number of students	126 360	129 220	130 910	131 250
-of whom foreign students	3 130	3 480	3 800	4 320

Polytechnic Master's

	2002	2003	2004	2005
Entrants	160	310	240	630
Number of students	160	450	610	1050

Source: AMKOTA

Studies and degrees

Studies leading to polytechnic degrees are organised as degree programmes comprising core and professional studies, elective studies, work placement and a final project.

Holders of the Bachelor-level polytechnic degree, who has additionally gained work experience, can upgrade their degree in a polytechnic Master's programme. The polytechnic Master's provides the same qualifications as a university Master's degree. In addition to a polytechnic degree, admission to polytechnic Master's programmes requires three years of work experience.

The polytechnic degrees are between 210 and 240 ECTS credits (3.5 to 4.5 years), and the polytechnic Master's from 60 to 90 ECTS credits (1.5 to 2 years) on top of it.

Each student has an individual study plan (ISP), which facilitates the monitoring of progress in studies.

Polytechnic fields of education by number of polytechnic Bachelor's degrees in 2005

	No. of degrees
Humanities and Education	272
Culture	1 748
Social Sciences, Business and Administration	4 771
Natural Sciences	1 102
Technology, Communications and Transport	5 588
Natural Resources and the Environment	672
Social Services, Health and Sports	5 558
Tourism, Catering and Domestic Service	1 432
Total	21 143

Source: AMKOTA

National joint application

All students apply to polytechnics through a national polytechnic application system. Polytechnics themselves decide on the selection criteria, the arrangement of entrance examinations and student admissions. Almost 90% of applications are submitted in electronic format via the internet.

The entry requirement to education leading to a polytechnic degree is a secondary school-leaving certificate or the matriculation examination, a vocational qualification or equivalent studies abroad.

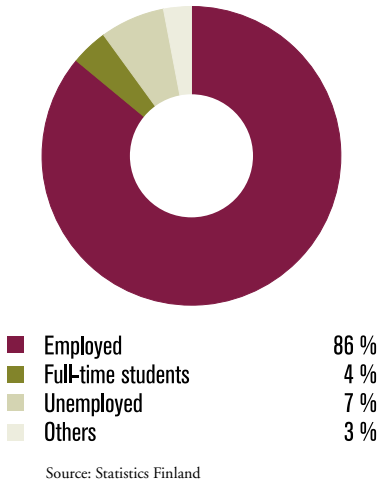
Steering of polytechnics

Polytechnics are municipal or private institutions and their operating licences are granted by the Government. Polytechnics have autonomy in their internal affairs.

The Ministry of Education, the polytechnics and their maintaining organisations conclude three-year performance agreements, in which they agree on objectives and the monitoring of their achievement and on major national development projects. Intakes and project funding are determined on an annual basis. Central and local governments co-finance the operations of polytechnics. Government allocates resources as core funding, which is based on unit costs per student, project funding and performance-based funding. In addition to this, polytechnics have external sources of funding.

Polytechnics also provide adult education and open polytechnic education geared to maintain and develop working life skills. The teaching and other arrangements in polytechnic adult education enable students to pursue degree studies alongside work. Adult students account for about 16% of all polytechnic students.

Placement in 2003 of those gaining polytechnic Bachelor's degrees in 2002



Source: Statistics Finland

UNIVERSITIES

Under the Universities Act, universities must promote free research and scientific and artistic education, provide higher education based on research, and educate students to serve their country and humanity. In carrying out this mission, universities must interact with the surrounding society and strengthen the impact of research findings and artistic activities on society.

All the 20 universities in Finland are state-owned. They comprise ten multidisciplinary universities, three schools of economics and business administration, three universities of technology, and four art academies. In addition, there is a National Defence College operating within the Ministry of Defence sector. Universities receive most of their funding from the state budget. Their operations are built on the freedom of education and science and university autonomy.

8

University degrees

Universities confer Bachelor's and Master's degrees, and postgraduate licentiate and doctoral degrees. In the new degree system introduced in 2005, students first study for the lower Bachelor's degree and then for the higher Master's degree.

The scope of studies is determined in ECTS credits. One year of full-time study is equivalent to 60 ECTS credits. The lower degree is 180 credits and its normative duration is three years of full-time study. The higher university degree is 120 ECTS credits, which is equivalent to two years of full-time study on top of the Bachelor's. In some fields, such as Medicine, the degrees are more extensive and take longer to complete.

Each student has an individual study plan, which facilitates the monitoring of progress.

University postgraduate education aims at a doctoral degree, which usually takes four years of full-time study. In addition to the required studies, doctoral students prepare a dissertation, which they defend in public. In Finland it is possible to study for an intermediate postgraduate degree called the licentiate before the doctoral degree.

Number of university students and degrees

	2002	2003	2004	2005
University Bachelor's and Master's degrees				
New students	21 876	20 936	19 931	20 084
Degrees awarded	14 690	15 290	15 310	15 832
Number of students	144 310	147 090	149 170	151 824
- of whom foreign students	2 840	2 890	3 050	3 250 (estimate)
Doctoral degrees				
Degrees awarded	1 220	1 260	1 400	1 420
Number of postgraduate students	21 940	22 960	22 110	22 200
- of whom foreign students	1 310	1 490	1 580	1 690 (estimate)

Source: KOTA

Student selection

Universities select their students independently by means of different types of entrance examinations. An admitted student may only accept one student place in degree education in a given academic year. With a view to simplifying student selection procedures, a joint universities application system will be adopted in the 2008/2009 academic year.

Steering of universities

In addition to policy defined in the Government Programme and the Development Plan for Education and Research, university activities are governed by three-year performance agreements signed with the Ministry of Education based on performance negotiations. The agreements specify the objectives of university operations, such as degree targets, resources, monitoring and evaluation of target achievement, and development targets. During the annual performance negotiations, the universities receive feedback, first orally and later in writing, on their previous year's performance and on development needs.

Financing of universities

Universities receive their core funding from the government. The operational appropriations are largely determined on the basis of degree targets and the number of degrees awarded. The resources allocated by the Ministry of Education consist of core funding, project funding and performance-based funding. Direct government funding covers about 64% of university budgets.

Core funding is calculated by means of a core funding formula, which is based on criteria relating to education and research and to interaction with society. The cost coefficients used in the formula allow for differences between various fields of study. The Ministry of Education grants discretionary project funding for major development needs. Performance-based funds are used to reward universities for the quality, effectiveness and efficiency of their operations.

Basic research in the Ministry of Education sector is largely financed by the Academy of Finland. The Academy is also responsible for the evaluation of research. Universities receive substantial external funding from various external sources for research projects and other purposes. Universities also have income from commercial services, such as continuing professional education.

Lifelong learning at university

University studies and degrees have been developed to enable people participate flexibly in education according to their life situations. Many fields offer Master's programmes and graduate-entry education tailored to different working life needs.

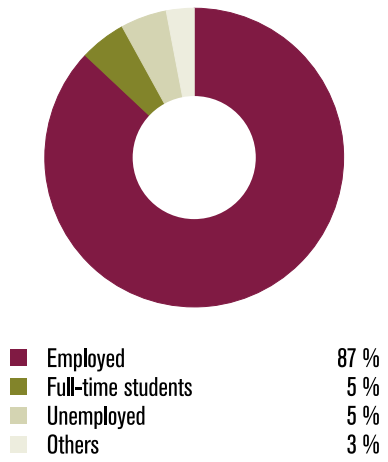
In addition to degree education, universities offer open university education, continuing professional education, and adult education funded by the labour administration.

Degrees conferred by universities by field of study in 2005

	Master's degree	% of women	Doctoral degrees	% of women
Theology	208	61	25	32
Humanities	1 704	80	113	55
Art and design	219	63	12	75
Music	133	61	11	45
Theatre and Dance	82	57	2	100
Education	1 583	83	83	69
Sport Sciences	91	49	5	40
Social Sciences	1 253	74	119	50
Psychology	228	87	19	89
Health Sciences	336	96	40	85
Law	414	54	15	40
Economics and Business Administration	1 734	55	89	46
Natural Sciences	1 558	53	272	44
Agriculture and Forestry	247	61	39	44
Engineering and Architecture	2 450	25	277	25
Medicine	460	70	248	59
Dentistry	54	67	20	75
Veterinary Medicine	48	92	11	73
Pharmacy	94	80	20	60
Fine Arts	24	75	2	0
Total	**12 920**	**60**	**1 422**	**49**

Source: KOTA

Placement in 2003 of those gaining higher university (Master's) degrees in 2002



Source: Statistics Finland

ADULT EDUCATION AND TRAINING

Pirjo Hammarberg, Noste

Adult education policy is designed to provide diverse study opportunities for the adult population. Finland offers excellent conditions for lifelong learning. Adult education and training is available at all levels of education and is geared to respond to adults' diverse educational needs, notably self-development, the upgrading of qualifications and the updating of competencies.

The Government has set an aim to raise the participation rate in adult education and training to 60% by 2008 and to narrow the qualifications gap between different age groups. The ageing of population and rapid changes in working life heighten the importance of adult education and training. A key consideration in a large and sparsely populated country is regional accessibility of education. Adult education and training is an important tool for promoting social coherence, equality and active citizenship.

In recent years, adult education policy has focused on raising the level of education among untrained adults. The aim is to enable gainfully employed adults between 30 and 59 years of age to acquire a vocational qualification or ITC skills required at work.

Finnish educational institutions offer a wide range of adult education and training. It is an important part of their operations. All educational institutions except comprehensive schools and upper secondary schools intended for young people provide adult education, which means that it is available at all levels of the education system. In addition, adults can study a great variety of subjects in liberal adult education.

With the exception of further and specialist vocational qualifications, adult education and training leading to qualifications is provided free of charge. The government also subsidises other forms of education and training intended for adults in order to keep student fees at a reasonable level.

Additional and continuing vocational training

Rapid changes and growing skill requirements in the labour market increase the significance of additional vocational training. The stated aim to prolong work careers and promote occupational mobility entails a wide range of opportunities for adults to maintain and develop their competencies. Vocational skills can be updated in further and continuing vocational training.

In Finland, virtually all vocational and higher education institutions offer further and continuing training, from short-term courses to extensive and demanding extension programmes.

Qualifications in adult education and training

Adults can study for a comprehensive school-leaving certificate and the matriculation examination and parts of them in flexible arrangements geared to employed people.

The VET sector offers competence-based qualifications of three different levels: vocational qualifications, further qualifications and specialist qualifications. For a vocational qualification, the mature student demonstrates command of the knowledge and skills required for a given occupation; for a further qualification vocational skills required of a skilled worker; and for a specialist qualification knowledge and skills needed for the most demanding work assignments in the field.

There are no formal training requirements for competence-based qualifications. An adult sitting a competence test can rely on knowledge and skills acquired in former training, in working life and in leisure pursuits, but most candidates participate in some preparatory training. The competence-based qualifications are supervised by qualification committees representing employers, employees and teachers. Competence-based vocational qualifications are equivalent to corresponding vocational qualifications intended for young people.

In polytechnics, adults study for the same polytechnic degrees as young people. The difference is that the arrangements in adult education are flexible and allow adults to study alongside work. As the entry to polytechnic Master's programmes requires at least three years of work experience after the polytechnic degree, they are typically adult education. Universities do not

have specific degree programmes for adults; instead, working-age adults study with other students.

It is also possible for adults to study parts of qualifications and degrees, which they may later include in a qualification. Adults may study different general upper secondary courses and modules included in competence-based qualifications.

There is an extensive provision of open studies which conform to the requirements of university and polytechnic degrees. They are intended to facilitate access to higher education studies. Open university education may also be provided by other educational organisations besides universities, but the education always follows university syllabi and is supervised by universities. An open university student who fulfils certain criteria may be admitted to study for a degree.

Liberal adult education

Liberal adult education supports personal development and provides knowledge and skills adults need as active members of their community. In Finland, liberal adult education means the provision of a network of institutions which has evolved over a long historical period. The aims and contents of liberal adult education are not set externally or from top down but determined by the institutions and the organisations that run them. The maintaining organisation may represent a given ideological or religious outlook or operate on the basis of local and regional educational needs.

The range of liberal adult education is wide. Even though the primary aim is personal development, many courses also provide knowledge and skills the students need in working life and as members of work communities.

Adult education and training and participant numbers (2004)

	Qualification-oriented education and training	Other education and training and parts of qualifications
General upper secondary education	General upper secondary education for adults 12 900	Upper secondary school subject studies 13 800
Vocational education and training	Preparatory training for competence-based qualifications, incl. apprenticeship training 42 500 Preparatory training for further and specialist qualifications, incl. apprenticeship training 66 200	Additional vocational training not leading to a qualification
Polytechnics	Adult education leading to polytechnic degrees 21 500 Polytechnic Master's 600	Open polytechnic 10 700 Polytechnic specialisation studies 8 100
Universities	Separate Master's programmes	Open university 82 300 University specialisation studies 4 300 Continuing professional education 83 300

The providers of liberal adult education include adult education centres, folk high schools, study centres, sports institutes and summer universities. These institutions may also be authorised by the Ministry of Education to provide general upper secondary education or VET.

In the coming years, the focus in liberal adult education will be on information society studies, immigrants' language instruction and cultural education, and studies promoting active citizenship. Liberal adult education institutions are also important providers of open university education.

Students in liberal adult education

	2002	2003	2004
Adult education centres	1 036 840	1 034 610	1 059 010
Folk high schools	134 490	138 900	147 780
Study centres	309 900	299 360	338 550
Summer universities	73 450	71 450	75 370
Sports institutes	84 900	87 280	79 770
Total	1 639 580	1 631 600	1 700 480

Source: Statistics Finland

Counselling and guidance for adult students

One of the priorities in recent adult education policy has been counselling and guidance. Effective counselling and guidance services are a prerequisite for raising the participation rates in adult education and training. Specific development targets are flexible transition from one stage of education to the next, recognition of prior learning, and electronic counselling and information services.

Financing of adult education and training

Qualification-oriented adult education and training is co-funded by the government and the local authorities; the exception is degree education at universities, which is totally financed by the government. Training leading to further and specialist qualifications is mostly publicly funded but may charge reasonable fees.

About half of liberal adult education costs are covered by the government and the rest mostly comes from student fees and from the maintaining organisations.

The purpose of state funding is to guarantee the largest possible provision without burdening the students with high fees. About 12% of the Ministry of Education main class in the state budget is allocated to adult education and training. Almost half of this funding is channelled to vocational adult training and one fifth to liberal adult education.

Employers purchase in-service training for their staff from adult education institutions and firms. The labour administration purchases a great deal of different training for unemployed people and for those at risk of unemployment.

Participation in adult education and training, people aged 18–64 (2000)

Age	N	% of the age group
18–64	1 754 057	54
25–64	1 528 644	55
50–64	406 033	42
Gender		
Male	798 731	49
Female	955 326	59
Level of education		
Primary or lower secondary education	340 450	37
Upper secondary education	725 994	51
Tertiary education	687 614	76

Source: Statistics Finland

RESEARCH

Karoliina Paatos

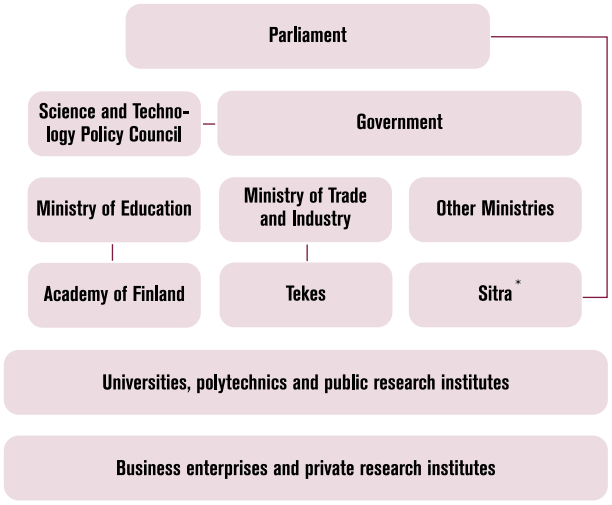
Finland invests in research and development. Education, science and technology policies have been developed on a long term with a view to strengthening the national innovation system. The aim is to promote knowledge and to raise the level and visibility of Finnish research. Finland supports the international success of Finnish research by funding high-quality research and promoting the establishment and development of creative research environments. Public research funding is used to strengthen the competence base underpinning sustainable economic growth and welfare.

The objective of science policy is to promote science, ensure positive development of the quality, effectiveness and internationalisation of research and postgraduate education, and to bring about an efficient and balanced research system. The development of scientific research is based on the Development Plan for Education and Research and policy formulated by the Science and Technology Policy Council of Finland.

The principles and legislation governing science, technology and innovation policies are decided by Parliament. The Government and its ministries are responsible for planning and implementing science and technology policy. The Ministry of Education's remit includes matters concerning education and science policy, whereas the Ministry of Trade and Industry is responsible for matters relating to industrial and technology policies.

The Science and Technology Policy Council plays a key role in promoting research, technology and scientific education. It develops and co-ordinates science and technology policy and prepares relevant plans and proposals. The Council is composed of the Prime Minister, who is the chair; the Minister of Education and Science and the Minister of Trade and Industry, who are vice chairs; the Minister of Finance and up to four other ministers; and representatives of funding organisations, universities, research institutes, business and industry, and employees.

Organisations in the research system



* Finnish National Fund for Research and Development

Research investments

In 2004, Finland invested 5,300 million euros in R&D activities. The total R&D expenditure represented 3.5% of the gross domestic product, which places Finland among the OECD top.

R&D is financed by the private sector (68%), the public sector (29%) and from foreign sources (3%). The electrical and electronics industries provide about half of overall corporate R&D investments.

Finland and Sweden are the only EU member states whose R&D investments already exceed three per cent of the GDP, which is the jointly agreed EU objective to be achieved by 2010. Finland and Sweden have also reached the target to raise the share of private investment to two thirds of the overall R&D activities.

Finnish scientific research has been productive, currently representing around 0.6% of global R&D activities. Publications and articles by Finnish researchers represent one per cent of all scientific publication and the citation rate is about 1.15% of all references.

During the past ten years, the number of R&D personnel in Finland has grown from 40,000 to nearly 80,000. This makes two per cent of the entire labour force, which is the highest proportion in the OECD. The number of doctoral degrees has doubled over the past decade.

Quality and internationalisation

Finland enhances the quality and impact of research through international co-operation. Measures are taken to promote international co-operation all levels of the research system.

Finland participates in the activities of major international bodies and organisations involved in research co-operation and is an active player in European co-operation. Finnish researchers and research organisations have fared well in the European Union's Framework Programmes for Research and Technological Development. Finland contributes to the development of the European Research Area by actively networking national research programmes.

One means used to improve the quality of research is competitive public funding, which is mostly channelled through the Academy of Finland and the Finnish Funding Agency for Technology and Innovation (Tekes). These organisations allocate more than 40% of public research funding.

In the Ministry of Education sector, the Academy of Finland is a major source of funding for scientific research. Its role is to raise the quality and visibility of Finnish scientific research through competitive research funding. Most of the Academy funding is channelled to university research. The Academy finances research projects and programmes, Centres of Excellence in Research, researcher posts, postgraduate education, and international co-operation. The Academy has four Research Councils, which decide on research funding in their respective fields.

Polytechnic and university research

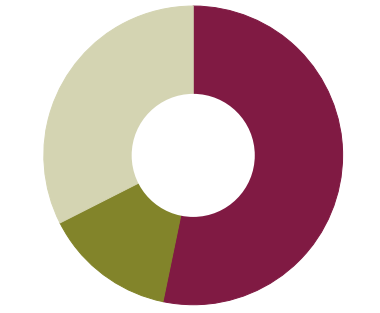
Polytechnics mostly conduct R&D which is geared to the needs of business and industry and usually linked to the structure and development of the regional economy. Current development targets are to promote interaction between education and R&D, staff development and networking between polytechnics, universities and research institutes.

Polytechnic R&D has expanded in recent years. The most important source of funding for polytechnic R&D is the EU Structural Funds.

The two main missions for universities are scientific research and research-based higher education, including postgraduate education. Doctoral degrees are only awarded by universities.

About half of university research funding comes directly from the state budget and is intended to safeguard infrastructure and other basic prerequisites for research. Universities allocate these resources independently. The other half of university research funding is external financing, which is mainly competitive

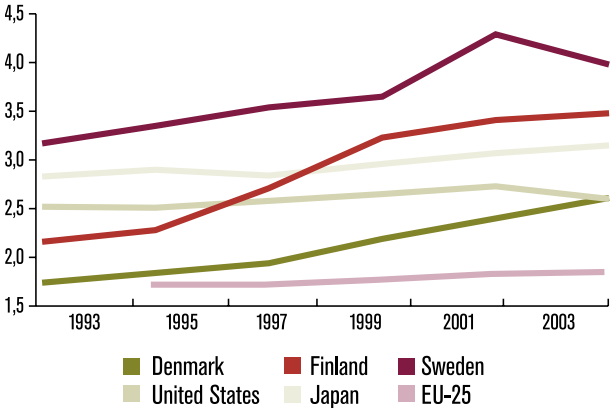
R&D personnel by sector in 2005



Enterprises	41 000
Public sector	11 000
Higher education sector	25 000
Total	77 000

Source: Statistics Finland

R&D investment in some OECD countries (% of GDP)



Source: OECD

public research funding. The main sources of external funding are the Academy of Finland and Tekes, while EU sources account for about 9%. The total university research expenditure was about 900 million euros in 2005.

Graduate schools

Postgraduate education provided by universities was enhanced in 1995 with the establishment of a graduate school system. Its foremost aims are to assure the quality of postgraduate education, shorten the time spent on writing doctoral dissertations and increase international co-operation.

The mission of graduate schools is to provide systematic instruction and guidance for doctoral students, who study full-time on a salary, aiming to finish their doctoral dissertations within four years. At the beginning of 2006, there were a total of 124 graduate schools with almost 1,500 places available for postgraduate students. One third of graduate school students complete their doctorates before reaching the age of 30.

Equality in the research sector

Finland has actively promoted equality in all sectors of society. Women have been in the majority among university students since the 1970s. The number of female doctors has been increasing steadily. During the past ten years, the number of women with doctoral degrees has more than tripled.

Finland is one of the pioneer countries in the development of women's research careers within the European Union. The number of women working in the R&D sector has risen steadily. In 2003, women accounted for about one third of all research personnel and about half of university research staff. The proportion of female professors in Finland is among the highest in the European Union.

Library and information services in support of research

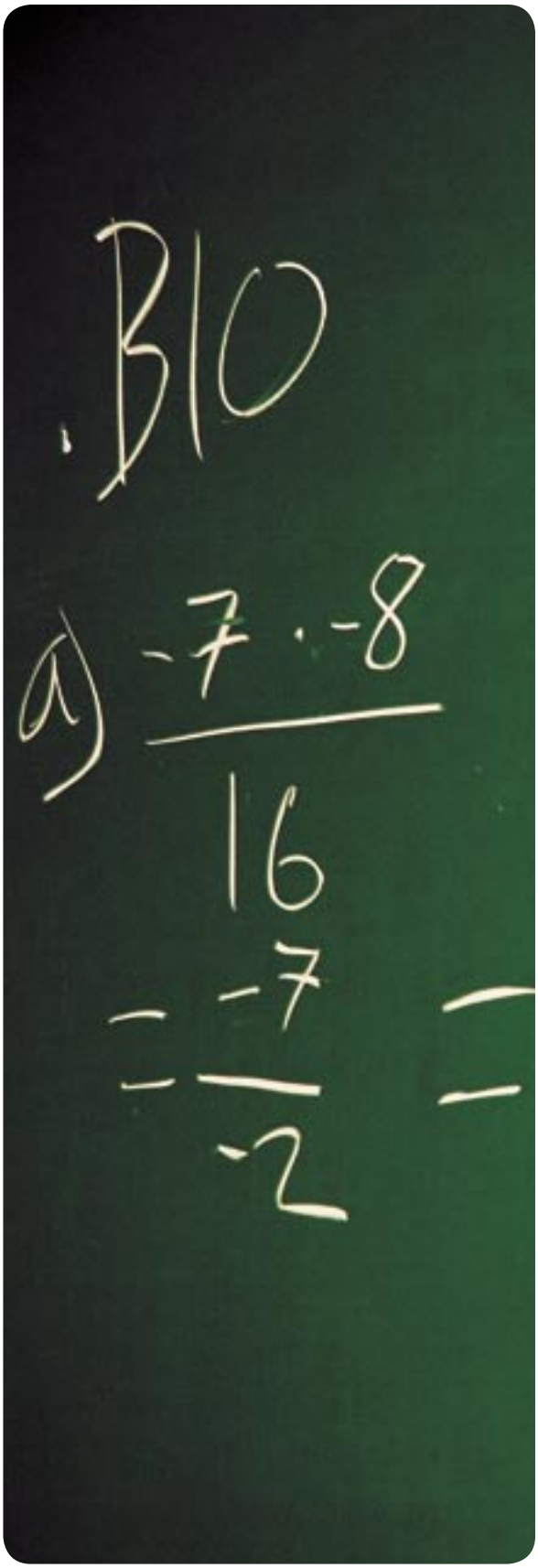
The Ministry of Education promotes support services in scientific research by funding the development and maintenance of research equipment, information networks, scientific computing, and the operations of scientific libraries. The Centre for Scientific Computing (CSC) is a state-owned IT centre for science and administered by the Ministry of Education.

The scientific libraries, i.e. university libraries, polytechnic libraries and specialist libraries, support higher education, studies and research.

R&D funding in the 2005 State Budget

	R&D funding € million	Share of total research funding %
Universities	417	26
Polytechnics	6	0.3
Academy of Finland	224	14
Tekes	448	28
State research institutes	259	16
University central hospitals	38	2
Other research funding	202	13
Total	1 594	100

Source: Statistics Finland



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